

THE RELATIONSHIP BETWEEN LEARNING STYLES AND CULTIVATION OF LEARNING INTEREST OF FRESHMEN IN CHENGGUAN MIDDLE SCHOOL *

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Abstract

The objectives of this research were: 1) to study learning style of Freshmen in Chengguan Middle School, 2) to study cultivation of learning interest of Freshmen in Chengguan Middle School, 3) to study the relationship between learning style and cultivation of learning interest of Freshmen in Chengguan Middle School. This study adopted a quantitative correlational research design. The purposive random sampling was 278 freshmen in Chengguan Middle School, selected according to Krejcie and Morgan table (1970). The research instrument was a self-designed questionnaires. The statistics are used for data analyzing by finding frequency, percentage, mean, standard deviation, and Pearson product moment correlation coefficient.

The findings of this study are expected to provide theoretical support for understanding the interaction between learning styles and learning interest, and offer practical implications for optimizing instructional strategies in secondary education.

The research results were:

4. Learning style of freshmen in Chengguan Middle School in 4 aspects was at high level ($\bar{x}$ =4.38, S.D.=0.69). Considering the results of these 4 research aspects were as follows: the highest rank was "Reading/Writing learning style", indicates a high level ($\bar{x}$ =4.82, S.D.=0.39). Followed by "Visual learning style" ($\bar{x}$ =4.81, S.D.=0.40), whereas "Kinesthetic learning style" was the lowest rank ($\bar{x}$ =3.93, S.D.=0.65).

5. Cultivation of learning interest of Freshmen in Chengguan Middle School

* Received 12 February 2026; Revised 24 February 2026; Accepted 1 April 2026

in 2 aspects was at a high level ($\bar{x}$ =4.53, S.D.=0.74). Considering the results of these 2 research aspects were as follows: the highest rank was “Intrinsic motivation interest”, indicates a high level ($\bar{x}$ =4.62, S.D.=0.64). Followed by “Extrinsic motivation interest” ($\bar{x}$ =4.43, S.D.=0.83).

6. The relationship between learning styles and learning interest showed a strong positive correlation ($r = .80$, $p < .01$). These findings suggest that aligning instructional strategies with students’ learning styles may enhance learning interest in secondary education contexts.

Keywords: Students’ Learning Style; Cultivation of Learning Interest; Chengguan Middle School

Introduction

Under the current background of the continuous deepening of educational reform in China, breaking through the traditional teaching model centered on teachers and highly unified in content and methods, paying attention to individual differences among students and exploring diversified teaching paths have become important directions for improving the quality of classroom teaching and learning outcomes. Studies have shown that teaching that ignores learners' differences often fails to meet students' cognitive and emotional needs, thereby affecting the development of their learning motivation and interest (Cronbach, 1957). Dunn and Dunn (1978) further pointed out that when teaching methods can match students' learning characteristics, students' learning engagement and learning outcomes will be significantly enhanced.

On this basis, learning styles have gradually become an important topic in educational psychology research. Keefe (1979) defined learning style as a relatively stable combination of characteristics of learners at the cognitive, emotional and physiological levels, providing a theoretical basis for understanding learning behavior from the perspective of individual differences. Although many studies at home and abroad have respectively explored the role of learning style or learning interest, in the middle school stage in China, there is still a lack of research that systematically analyzes the relationship between the

two and proposes feasible teaching strategies in combination with local teaching practice.

From the perspective of learning interest development, the four-stage model of interest development proposed by Hidi and Renninger (2006) indicates that learning interest gradually develops from situational interest to stable individual interest, and the degree of fit between learning context and learner characteristics plays a key role in this process. This viewpoint provides important enlightenment for understanding the formation mechanism of learning interest from the perspective of learning style. (Meng, C. et al., 2023; Zimin, Z., et al., 2023; Zhonghua. et al., 2023)

In terms of motivation theory, Deci and Ryan (1985, 2000) proposed the self-determination theory, which distinguishes between intrinsic motivation and extrinsic motivation, emphasizing that autonomy, competence and relationality are the core psychological needs that promote the continuous development of intrinsic motivation and learning interest. Relevant studies have shown that intrinsic motivation is more conducive to the long-term maintenance of learning interest, while excessive reliance on extrinsic rewards may weaken learners' original intrinsic interest (Deci et al., 1999). Furthermore, learning participation is regarded as an important mediating variable connecting learning motivation and learning outcomes. Skinner et al. (2008) pointed out that a high level of behavioral, emotional and cognitive participation helps enhance students' value recognition of learning activities, thereby promoting the development of learning interest.

In the theory of learning styles, Fleming (1987) proposed the VARK learning style model, which classifies learning styles into visual, auditory, read-write and kinesthetic types based on learners' sensory preferences for information input channels. This model emphasizes the significance of matching teaching methods with learning styles, arguing that a matching teaching design helps to reduce cognitive load, enhance learning experience and motivation.

Based on the above theories, this study takes the VARK learning style model as the core theoretical framework, integrates self-determination theory and learning interest development theory, and systematically explores the influence mechanism of different learning styles on the cultivation of middle

school students' learning interests from both cognitive and emotional levels. The research results not only help to make up for the deficiencies in the study of the relationship between learning styles and learning interests in the context of Chinese middle schools but also provide theoretical basis and practical reference for the implementation of differentiated teaching and educational management decisions in middle school classrooms.

Objectives

1. To study learning style of Freshmen in Chengguan Middle School
2. To study cultivation of learning interest of Freshmen in Chengguan Middle School
3. To study the relationship between learning style and cultivation of learning interest of Freshmen in Chengguan Middle School

Literature Review

The literature review explores two keys relevant to the research areas.

1. Students' learning style

Previous studies have extensively examined the characteristics, distribution, and instructional implications of learning styles across diverse educational contexts. Fleming and Mills (1992) conceptualized visual learning style as a preference for acquiring information through visual representations, demonstrating that visual formats enhance comprehension and retention among visual learners. Similarly, Zheng Chunmei (2011) identified auditory learners as favoring listening, repetition, and discussion, with strong auditory memory and active classroom participation. Beyond individual style characteristics, empirical research has emphasized the importance of alignment between teaching strategies and learning styles. Wu Lilin and Wang Fei (2009), as well as Cui Feng (2013), found that instructional approaches congruent with students' learning styles significantly enhance learning enthusiasm and instructional effectiveness. However, more recent studies have shifted toward a dynamic and flexible view of learning styles. Research by Bhagat et al. (2015), Rezigalla and Ahmed (2019), and Samarakoon et al. (2013) suggests that multimodal learning is prevalent and often more effective, with learning style preferences evolving across academic

stages and serving better as tools for strategy awareness than rigid classification systems. Moreover, learning styles have been shown to correlate positively with classroom participation (Dong Jingjing & Yao Benxian, 2017) and influence learners' engagement and satisfaction in online environments (Drago & Wagner, 2004). At the secondary and higher education levels, studies by Subagja (2023) and Lee (2025) further indicate that learning styles should be regarded as reference variables for instructional design rather than direct predictors of academic performance. Collectively, these findings highlight learning styles as dynamic, context-sensitive constructs that can inform diversified and learner-centered instructional design.

2. Cultivation of learning interest

Existing literature has consistently emphasized the central role of learning interest and motivation in students' learning processes, with self-determination theory (SDT) providing a foundational theoretical framework. Deci and Ryan (1985) distinguished intrinsic and extrinsic motivation, demonstrating that intrinsically motivated learning—supported by autonomy, competence, and relatedness—more effectively sustains curiosity, long-term engagement, academic performance, and independent problem-solving than externally regulated learning. Empirical studies further confirm the dominant role of intrinsic motivation. Al Shuaili (2025) found intrinsic motivation to be a significantly stronger predictor of students' GPA and learning attitudes than extrinsic motivation, while Sahade et al. (2022) reported that although both intrinsic and extrinsic motivation contribute to academic performance, extrinsic motivation may exert stronger short-term predictive effects in specific educational contexts. Beyond motivational orientation, instructional design and learning environments play a crucial role in interest cultivation. Reeve et al. (2023) demonstrated that inquiry-based learning significantly enhances students' intrinsic interest and participation, and studies by Wang Yuting (2017) and Wang Yajuan and Yang Yumin (2012) highlighted the importance of supportive learning environments, instructional support, and positive teacher–student relationships in sustaining learning enthusiasm. Moreover, emotional and psychological factors have been identified as key internal mechanisms. Zheng Mingling (2020) and Ding Yongyin (2016) showed that positive emotional experiences and active learning attitudes

regulate cognitive engagement and are essential for the development and maintenance of learning interest. Collectively, these studies suggest that learning interest is a multidimensional construct shaped by motivational orientation, emotional experience, and supportive instructional contexts, with intrinsic motivation playing a particularly critical role in promoting sustained and meaningful learning.

3. Research Framework

In this study on the relationship between learning styles and the cultivation of learning interests among freshmen in Chengguan Middle School, the independent variable adopted Fleming's (1987) VARK learning style model, dividing students into visual, auditory, reading and writing, and kinesthetic types to reflect the differences among individuals in information acquisition and processing. The theoretical basis of the dependent variable is the self-determination theory (Deci & Ryan, 1985, 2000), which defines learning interest from the perspective of motivation and distinguishes between intrinsic motivation and extrinsic motivation. A variety of theories provide the basis for the relationships among these variables.

The research framework can be described as the figure following.

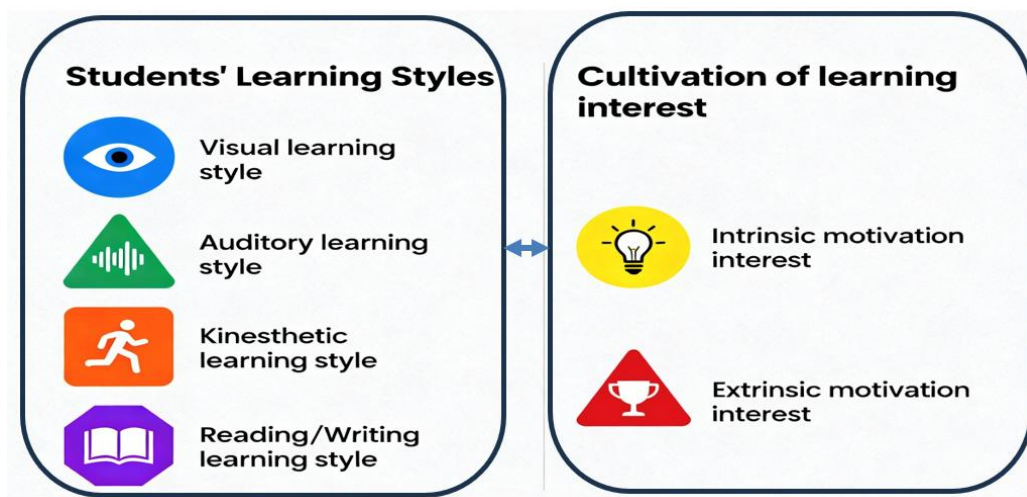


Figure 1 Research Framework

Methodology

This study adopts a quantitative research method to systematically explore the relationship between integrated teaching strategies and students' comprehensive ability. The research process includes population and sample determination, research instrument design, data collection, and data analysis.

3. Population and the Sample Group

Population

The Population research subjects are 1,000 freshmen in Chengguan Middle School.

Sample

The sample group of this study is 278 freshmen in Chengguan Middle School according to Krejcie and Mogan table (1970) by purposive random sampling.

4. Research Instrument

The research instrument is a questionnaire with 3 parts:

Part 1: General Information. This section has questions to gather background information on the respondent's gender, age, and average score of compulsory subjects.

Part 2: Student learning style. it is 5 rating Scales. This main section has learning style statements measured on a 5-point Likert scale ranging from "the least agree" to "the most agree". It is organized into 4 dimensions: 1) Visual Learning Style (5 statements); 2) Auditory Learning Style (5 statements); 3) Kinesthetic Learning Style (5 statements); 4) Reading/Writing Learning Style (5 statements).

Part 3: Cultivation of learning interest. it is 5 rating Scales. This main section has Cultivation of learning interest statements measured on a 5-point Likert scale ranging from "the least agree" to "the most agree". It is organized into 2 dimensions: 1) Intrinsic Motivation (10 statements); 2) Extrinsic Motivation (10 statements).

All statements display consistency with the measurement target as evidenced by an average score of 0.67 to 1.00 on the acceptable consistency index (IOC). The reliability of a pilot test of questionnaires assessed using

Cronbach's α , a statistic measuring internal consistency, with α value of 0.85, indicating excellent internal consistency.

3. Data Collection

To ensure the systematic collection of data, the researcher implemented the following procedures:

Distribution: The online questionnaires were distributed to students at freshmen in Chengguan middle school via digital channels. Each respondent was informed of the research objectives, confidentiality, and their voluntary participation.

Platform Utilization: Data were collected through the "Questionnaire Star" (Wenjuanxing) online platform, which facilitated efficient data gathering and management.

Data Screening: Upon completion of the collection period, the raw data were screened. Invalid responses, such as incomplete forms or patterned answers, were excluded to ensure the integrity of the results.

Preparation for Analysis: The final valid datasets were coded and organized for statistical processing and analysis.

4. Data analysis

Part 1 To study learning style of Freshmen in Chengguan Middle School, data analysis uses mean and stand deviation.

Part 2 To study cultivation of learning interest of Freshmen in Chengguan Middle School, data analysis uses mean and stand deviation.

Part 3 The relationship between learning style and cultivation of learning interest of Freshmen in Chengguan Middle School was analyzed by using the Pearson Product Moment Correlation Coefficient (r).

Results

Part 1: Students' learning style

Table 1 The mean ($\bar{x}$) and standard deviation (S.D.) of learning style of Freshmen in Chengguan Middle School in 4 aspects.

Students' Learning Style	$\bar{x}$	S.D.	Level	Ranking
5. Visual learning style (X1)	4.81	0.40	High	2

Students' Learning Style	$\bar{X}$	S.D.	Level	Ranking
6. Auditory learning style (X2)	3.97	0.64	High	3
7. Kinesthetic learning style (X3)	3.93	0.65	High	4
8. Reading/Writing learning style (X4)	4.82	0.39	High	1
Total	4.38	0.69	High	

From Table 1 considering, the overall average of learning style of freshmen in Chengguan Middle School was at a high level ($\bar{X}$ =4.38, S.D.=0.69). Considering the results of these 4 research aspects were as follows: the highest rank was “Reading/Writing learning style” ($\bar{X}$ =4.82, S.D.= 0.39), indicates a high level. Followed by “Visual learning style” ($\bar{X}$ =4.81, S.D.=0.40), whereas “Kinesthetic learning style” was the lowest rank ($\bar{X}$ =3.93, S.D.=0.65).

Part 2: Cultivation of learning interest

Table 2 The mean ($\bar{X}$) and standard deviation (S.D.) of cultivation of learning interest of Freshmen in Chengguan Middle School in 2 aspects.

Cultivation of Learning Interest	$\bar{X}$	S.D.	Level	Ranking
5. Intrinsic motivation interest (Y1)	4.62	0.64	High	1
6. Extrinsic motivation interest (Y2)	4.43	0.83	High	2
Total	4.53	0.74	High	

From Table 2 consideration, the overall average of cultivation of learning interest of Freshmen in Chengguan Middle School in 2 aspects, was at a high level ($\bar{X}$ =4.53, S.D.=0.74). Considering the results of these 2 research aspects were as follows: the highest rank was “Intrinsic motivation interest” ($\bar{X}$ =4.62, S.D.=0.64), indicates a high level. Followed by “Extrinsic motivation interest” ($\bar{X}$ =4.43, S.D.=0.83).

Part 3: The relationship between learning style and cultivation of learning interest

Table 3 The relationship between learning style and cultivation of learning interest.

Cultivation of learning interest (Y _{tt})	Students' learning styles (X _{tt})				
	X1	X2	X3	X4	X _{tt}
Y1	0.72**	0.72**	0.68**	0.74**	0.83**
Y2	0.64**	0.62**	0.64**	0.66**	0.75**
Y _{tt}	0.69**	0.68**	0.68**	0.71**	0.80**

** refers to statistical significance level at .01

From Table 3, it is shown that the relationship between learning style and cultivation of learning interest of Freshmen in Chengguan Middle School has a positive correlation at the high level with statistical significance level at .01 ($r=0.80$).

Discussion

1. Freshmen at Chengguan Middle School show a high overall level of learning style preference, with reading/writing ranked highest, followed by visual, while kinesthetic learning is least developed. This distribution can be attributed to the exam-oriented instructional context of Chinese secondary education, where textbook reading, written exercises, and visual presentations dominate, whereas experiential activities are limited. Similar patterns have been reported in previous studies, indicating that teaching methods strongly shape learning style distributions, with reading/writing and visual styles predominating and kinesthetic learning underrepresented (Drago & Wagner, 2004; Dong & Yao, 2017; Rezigalla & Ahmed, 2019).

2. The level of learning interest among freshmen is generally high, with intrinsic motivation exceeding extrinsic motivation. This may be explained by students' novelty experiences and schools' emphasis on guidance and positive feedback during the transition to a new learning environment, which supports autonomy and competence. These findings are consistent with Self-Determination Theory and interest development theory, which highlight the dominant role of intrinsic motivation in sustained learning engagement (Deci & Ryan, 1985; Hidi & Renninger, 2006; Schunk et al., 2014).

3. A relatively strong relationship is observed between learning styles and learning interest, particularly between learning styles and intrinsic motivation,

whereas the weakest association is found between auditory learning style and extrinsic motivation. This suggests that alignment between teaching methods and students' learning styles enhances autonomy and active participation, thereby fostering intrinsic interest, while passive auditory learning offers limited motivational support. These results align with prior research indicating that learning interest develops more effectively in active and self-determined learning contexts than in externally regulated or passive environments (Deci & Ryan, 1985; Hidi & Renninger, 2006; Fleming & Mills, 1992).

4. This study has several limitations. The cross-sectional design precludes causal conclusions regarding the relationship between learning styles and learning interest. Although significant correlations were identified, the direction of influence remains uncertain. The use of convenience sampling from a single middle school may also limit the generalizability of the findings to other educational contexts. In addition, reliance on self-report questionnaires introduces the possibility of common method variance and response bias. Future research employing longitudinal designs, broader samples, and multiple data sources would provide more robust evidence and enhance the external validity of the conclusions.

Recommendation

The implementation of the research results is as follows.

4. Incorporate active learning strategies such as problem-based tasks, simulations, cooperative inquiry, and project-based learning across instructional contexts to strengthen students' kinesthetic learning experiences.

5. Enhance extrinsic learning interest by clarifying learning goals, strengthening feedback mechanisms, and adopting diversified, non-material incentives that connect learning tasks with real-life and future development contexts.

6. Transform auditory instruction from one-way lecturing into interactive practices, including discussion, debate, and peer explanation, while embedding external incentives within the learning process.

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